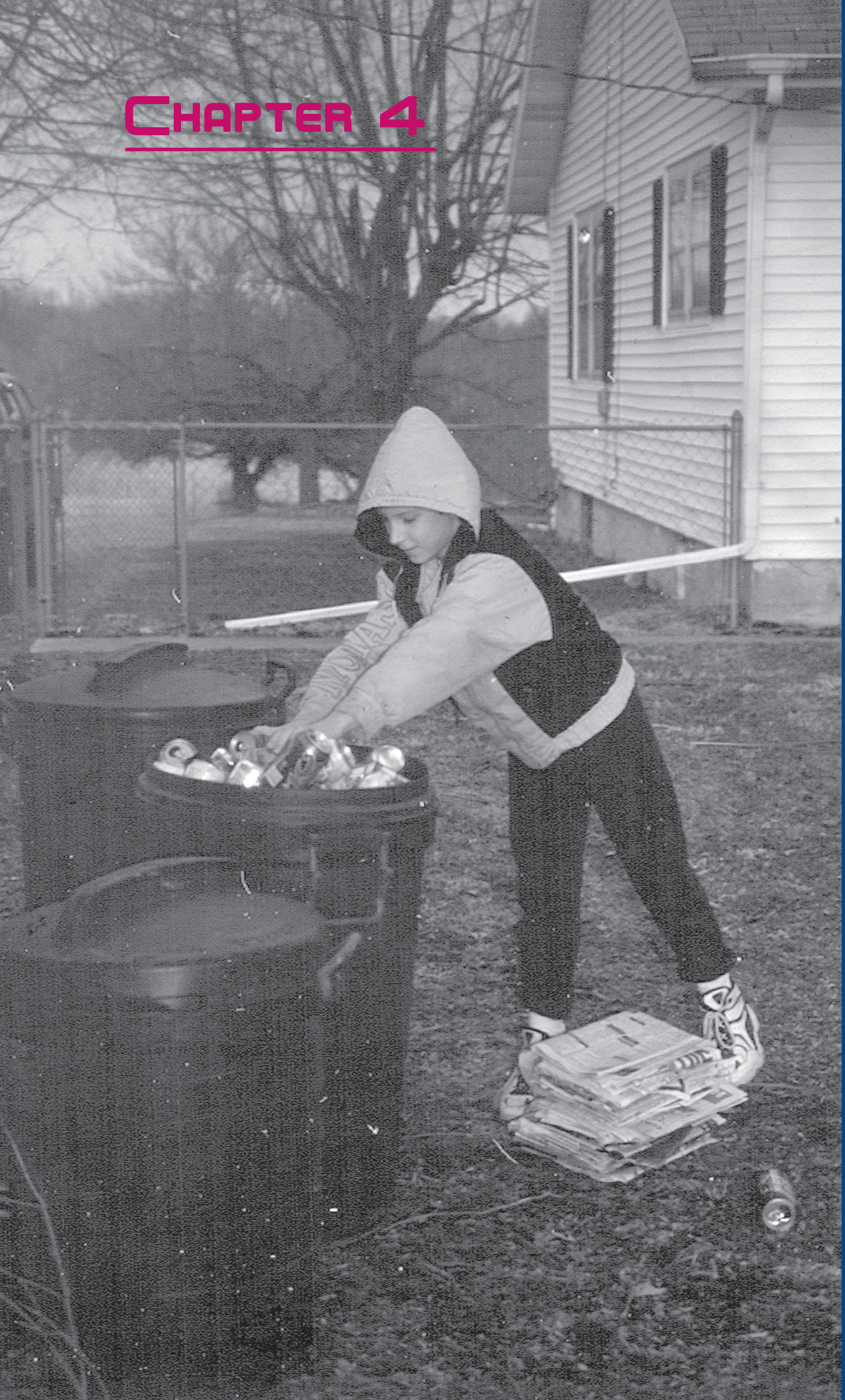


Chapter 4

Waste

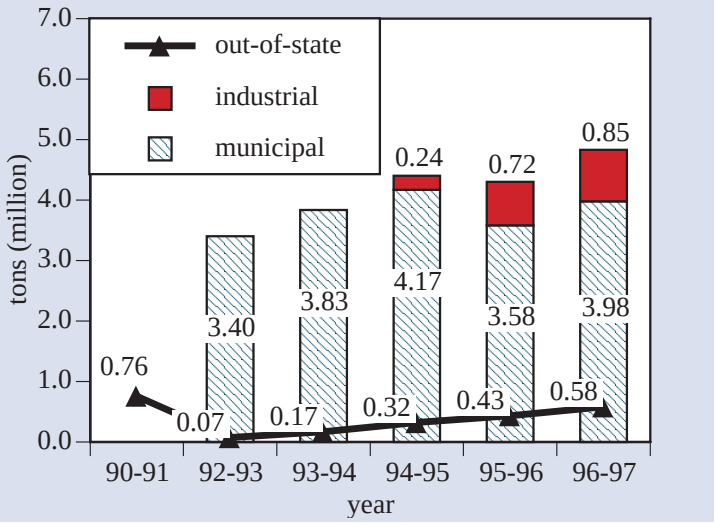
Indicator 1: Municipal Solid Waste Generation and Disposal

Background

National data reveal that Americans continue to generate a significant amount of garbage. During 1960, a person typically generated 2.7 pounds of garbage a day. In 1996, that amount increased 60% to 4.3 pounds of waste per day. The discard rate per person, after recovery and reuse, is estimated by the U.S. EPA at 3.2 pounds per day. Nationwide, 210 million tons of municipal waste were generated during 1996.

Figure 1

Disposal of Solid Waste at Municipal Solid Waste Landfills in Kentucky



Note: Fiscal year (July 1-June 30). Totals rounded. 1990-91 data not available for total waste disposed. Industrial waste data not available for 1992-93, 1993-94. Out-of-state numbers are totaled in municipal and industrial waste.
Source: Ky. Division of Waste Management

Source Municipal solid waste includes durable goods, nondurable goods, containers, food scraps, yard waste and miscellaneous wastes from residential, commercial, and industrial sources. Most of the solid waste generated in 1996 was paper, comprising 38% of the waste stream, followed by yard waste at 13%, food waste 10%, plastics 9%, metals 8%, glass 6%, and other 10%, according to U.S. EPA studies.

Goal Reduce the weight of municipal solid waste disposed at municipal landfills by a minimum of 25% by July 1, 1997, using fiscal year 1993 as a base year per KRS 224.43-010.

Progress In fiscal year 1996-97, 4.83 million tons of waste were disposed at solid waste municipal landfills in Kentucky. Of this total, 3.98 million tons were classified as municipal household and commercial waste and 850,000 tons were industrial solid waste. Of the 4.83 million tons of waste disposed at solid waste landfills, 580,000 tons (12%) were imported from out-of-state, most of which was from neighboring states.

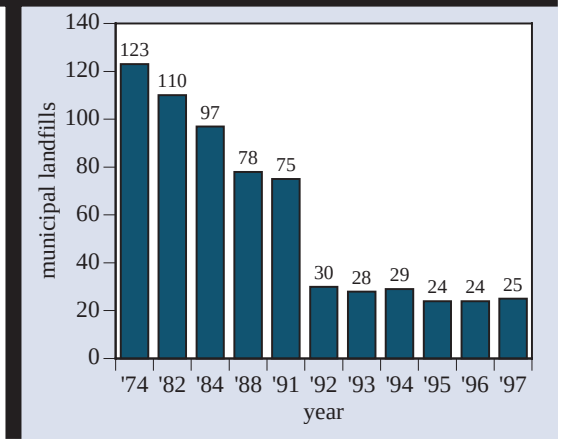
Kentucky has seen the amount of municipal waste disposed at municipal solid waste landfills increase since 1993, likely the result of an increase in the number of households participating in a garbage collection system as well as the cleanup of hundreds of illegal dumps in the Commonwealth. As such, Kentucky has not met its goal of reducing the weight of municipal garbage disposed at landfills by 25%. In fact, the amount of municipal garbage disposed at landfills during fiscal year 1996-97 increased 4% over 1993-94 levels.

Indicator 2: Municipal Solid Waste Landfills and Capacity

Background Kentucky began regulating solid waste disposal in 1969. At that time there were hundreds of landfills and thousands of open dumps which posed public health and environmental threats.

Solid waste issues again moved to the forefront of the state's environmental agenda in 1987, after Kentucky was targeted for solid waste disposal by firms in the Northeastern U.S., where landfill capacity was virtually nonexistent. This issue, combined with the fact that many landfills were leaking contaminants into ground and surface waters, led to the passage of a state law in 1991 to close substandard landfills, better plan and develop state-of-the-art landfills, and ensure the proper disposal of solid waste.

Figure 2 Municipal Solid Waste Landfills in Kentucky



Note: Contained permitted Municipal Solid Waste landfills.
Source: Ky. Division of Waste Management

Source Municipal solid waste (MSW) landfills are operated by private companies, cities, counties, or groups of counties. In addition to the 25 active municipal solid waste landfills, there are approved construction permits for six more MSW landfills.

Goal Provide for the management and disposal of waste in a manner that will protect the public health and welfare; prevent the spread of disease and creation of nuisances, conserve our natural resources; enhance the beauty and quality of our environment; and encourage a regional approach to solid waste management.

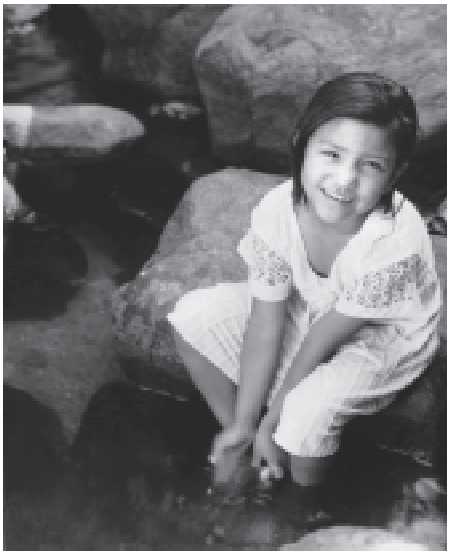
Figure 3 Average MSW Landfill Tipping Fees in Ky.

Year	Tipping Fee/ton
1993	$21.69
1994	$23.49
1995	$24.43
1996	$27.49
1997	$27.50
1998	$27.90

Note: Tipping fee - cost to dispose of a ton of waste. Earlier data not available.

Source: National Solid Waste Mgmt. Assn.; Biocycle, April 1998.

Progress Solid waste laws and regulations enacted in 1991 and 1992 have led to the closure of 56 of the state's 75 MSW landfills. These closed landfills must monitor groundwater for a two-year period and install a leachate collection system (a system to collect and treat liquids leaching from the landfill) if contamination is detected. Groundwater monitoring systems have been installed at 43 of the closed MSW landfills. Fourteen have confirmed groundwater contamination.



Kentucky now has 25 state-of-the-art regional MSW landfills. These landfills must meet stringent construction and operating standards including plastic and clay composite liners (21 landfills) or double composite liners (4 landfills), leachate recovery, and the use of a comprehensive system to monitor groundwater for up to 75 different parameters. The 25 MSW landfills are permitted to provide for 18.95 years of capacity (85.6 million tons).

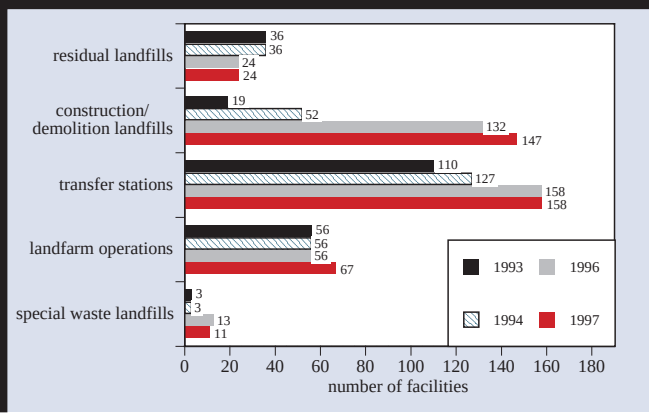
The cost to dispose of a ton of waste at landfills (tipping fee) has increased since the passage and of the 1991 solid waste law and stricter construction and operation standards for MSW landfills took effect. Trends reveal that tipping fees have leveled out during the past few years. However, there is concern, given the consolidation that is occurring within the waste management industry, tipping fees may rise in the future.

Indicator 3: Waste Management Facilities

Background In addition to municipal solid waste landfills, Kentucky has other waste management facilities including construction/demolition debris (CDD) landfills, residual landfills, landfarms, and special waste landfills.

Each of these solid waste management facilities receives various types of waste and has different monitoring and closure requirements. CDD landfills are designed to receive construction and demolition debris or other inert waste. CDD landfills give municipalities a low-cost alternative for the disposal of inert waste. The average cost to dispose of waste at CDD landfills is $7 to $10 a ton compared to $27.90 a ton at MSW landfills.

Figure 4
Number of Solid Waste Management Facilities in Kentucky



Note: In 1997, there were 21 CDD landfills greater than one acre and 126 less than one acre.
Source: Ky. Division of Waste Management

Residual landfills are operated by industries to dispose of solid waste by-products from the manufacturing process. Special waste landfills are designed to dispose of high-volume low-hazard wastes such as mining waste or fly ash generated by power plants. Landfarms are operations that land apply solid waste, biosolids (wastewater treatment sludge) or special waste.

Source In 1997, there were 147 construction/demolition debris landfills, 24 residual landfills, 11 special waste landfills, and 67 landfarms permitted to operate in Kentucky.

Goal Ensure proper construction, operation, and closure of solid waste management facilities to protect public health and welfare, prevent the spread of disease and creation of nuisances, conserve natural resources, and enhance the beauty and quality of the environment.

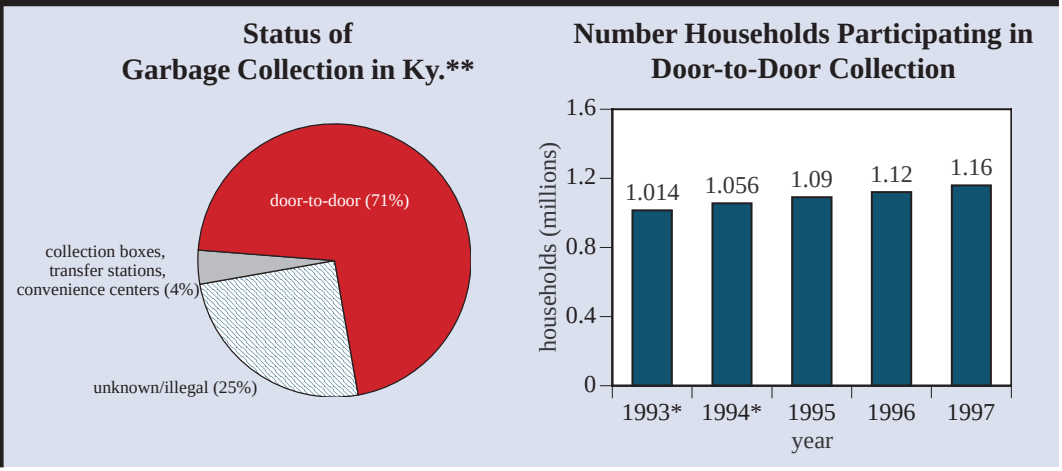
Progress The number of CDD landfills continues to increase in Kentucky. CDDs less than one acre are exempt from groundwater monitoring and reporting requirements. Of the 147 CDDs, 126 are less than one acre. During fiscal year 1997, 878,671 tons of waste were disposed of at the 21 CDD landfills greater than one acre—12 of which had groundwater contamination problems.

In 1997, 768,571 tons of waste were disposed of at the 24 residual landfills operating in the state. All 24 of the residual landfills in Kentucky are monitoring groundwater and ten have confirmed groundwater contamination.

Special waste landfills have increased in Kentucky from three in 1993 to 11 in 1997. In 1997, 2.2 million tons of waste were reported disposed of at special waste landfills. Two of the 11 special waste landfills have confirmed groundwater contamination. Of the 67 landfarm operations permitted to operate in Kentucky, three are required to monitor groundwater and one has detected contamination.

Indicator 4: Garbage Collection

Figure 5 Households Participating in Garbage Collection



*Note: * Based on households participating in garbage collection (not broken down by door-to-door collection for these years). **Based on 1,638,000 homes per 1996 Census. Source: Ky. Div. of Waste Mgmt., State Data Center*

Background Garbage collection has long been a challenge in Kentucky. In 1991, only 14 counties offered residents door-to-door garbage collection services. Illegal disposal of garbage prompted the state to adopt a universal collection law in 1990 to help curb open dumping. As a result, 113 counties now have door-to-door as their primary means of garbage collection. However, while the law specifies that counties must provide collection services, it does not mandate participation.

Source The primary responsibility for municipal waste collection rests with county governments. Each county has developed a plan detailing a comprehensive approach to collecting, disposing, and reducing solid waste.

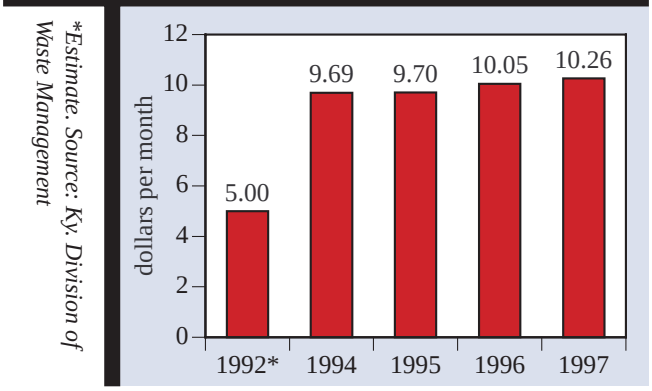
Goal Provide for county universal garbage collection programs by July 1, 1994. The collection programs can be door-to-door, direct-haul to a staffed convenience station, or other alternatives approved by the Natural Resources and Environmental Protection Cabinet.

Progress All counties have enacted garbage collection ordinances. But most ordinances are voluntary in nature. Only 20 counties have passed mandatory garbage collection ordinances.

County solid waste reports for 1997 indicate that an estimated 71% of Kentucky households participated in a door-to-door garbage collection system. But participation rates vary greatly by county—from 100% in Jefferson County to 28% in Knox County. Average monthly garbage collection fees have increased from $9.69 a month in 1994 to $10.26 a month in 1997.

Counties also reported that 4% of the state's households hauled their garbage to transfer stations, convenience centers, or collection boxes. It is not known how the remaining 25% of households disposed of an estimated 3.35 million pounds of garbage a day, since there is no statewide system in place to track other disposal methods other than door-to-door collection. Some of this waste may be properly disposed while some may be illegally dumped.

Figure 6 Average Monthly Residential Garbage Collection Fees in Ky.

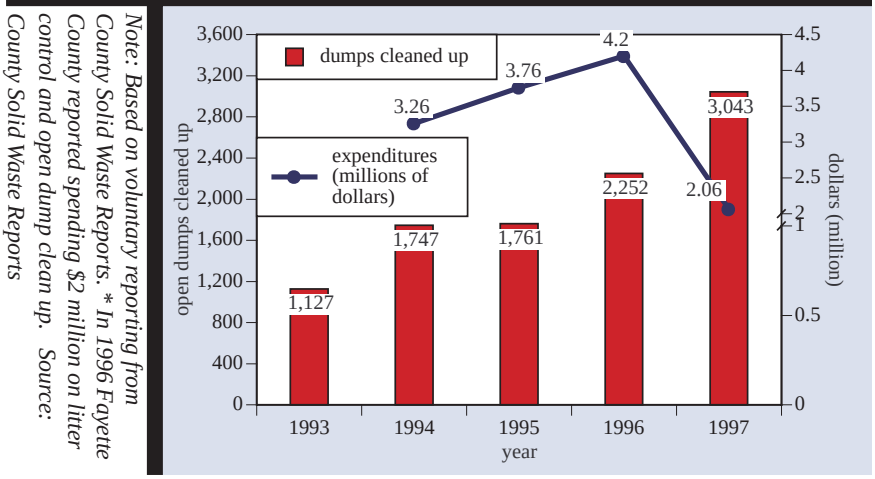


**Estimate. Source: Ky. Division of Waste Management*

Indicator 5: Open Dumps

Figure 7

Open Dump Cleanups and Expenditures in Kentucky



*Note: Based on voluntary reporting from County Solid Waste Reports. * In 1996 Fayette County reported spending $2 million on litter control and open dump clean up. Source: County Solid Waste Reports*

Background Each and every day tons of garbage are illegally dumped in rivers, down hillsides, and along roads polluting the environment and despoiling the beauty of our landscape. While the exact amount of garbage illegally disposed is unknown, thousands of open dumps attest to the fact that illegal dumping remains a considerable problem in the Commonwealth.

Source An estimated 1.23 million households (75% of the state's households) participated in some system of garbage collection in 1997. It is not known how the remaining 25% of the state's households disposed of an estimated 3.35 million pounds of garbage a day. Some of this waste may have been hauled to a collection station while some may have been illegally dumped.

Goal To encourage state and local governments, business, industry, civic groups, environmental groups, and citizens to work together to clean up Kentucky and to educate citizens about the importance of proper garbage disposal.

Progress The state has made impressive gains during the past few years in cleaning up open dumps. In 1996, the Natural Resources and Environmental Protection Cabinet (Cabinet) initiated a campaign to stop illegal dumping. The Cabinet joined with other agencies to promote greater public awareness of the threats posed by illegal dumping and to step up enforcement of open-dump laws. A statewide toll-free hotline (1-888-NO-DUMPS) was established in April 1996 to provide Kentuckians an opportunity to report open dumps.

As a result of the campaign, the efforts of local solid waste management officials, and other organizations such as PRIDE, 3,043 open dumps were reported cleaned up in 1997 by the county officials—an increase of 35% over 1996 cleanups. That year, county officials issued 7,806 citations for illegal dumping, littering, and failure to participate in mandatory garbage collection systems. Of the 7,806 citations, 553 were addressed through the courts and 502 resulted in court actions. Bell County led the state with 677 citations issued in 1997 followed by Leslie County with 300 citations. The Cabinet also inspected 2,406 illegal dumps and issued 1,590 notices of violation since 1997, resulting in violators cleaning up 490 illegal dumps. The Cabinet recently purchased video surveillance equipment to help catch open dump violators.

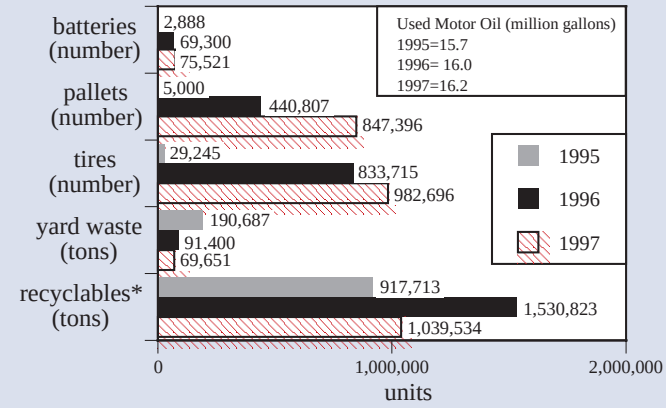
Many counties have hired solid waste coordinators to promote proper solid waste management. Counties with solid waste coordinators have steadily increased—from 40 in 1992, to 88 in 1995, and to 97 in 1997. Ninety counties have also enacted open dump ordinances to give local officials authority to cite and prosecute violators.

State efforts to address the problem of waste tires proceed. Each year, Kentuckians produce 3.8 million waste tires. In 1998, the state spent $2.6 million to clean up seven waste tire piles containing an estimated 2.8 million tires. The General Assembly passed House Bill 636 in 1998 to strengthen the state's waste tire program. A $1 fee for each new tire purchased will be used to clean up tire piles and prevent new ones. A major initiative of the program is county-based tire amnesty programs to collect waste tires on a one-time basis free of charge from individuals, farmers, and small businesses. By 2002, all counties will hold waste tire amnesty days. In 1998, five counties held amnesty days and collected 43,915 waste tires.

Indicator 6: Recycling

Background Public awareness of the need to reduce, reuse, and recycle wastes continues to grow. More and more households are recycling their waste. The U.S. recovered an all-time high of 45 million tons of paper in 1997, according to Recycling Times. This represents a 5% gain from the amount recovered in 1996. The aluminum industry also reports an estimated 66% of the 101 billion aluminum cans produced nationally were recycled in 1997. In addition to extending the life of landfills, recycling may also prove to be an important tool in reducing global warming. The U.S. EPA estimates that recycling of municipal solid waste lowers energy requirements for making products with virgin materials. In addition, recycling paper products helps reduce timber harvests, leaving trees to act as carbon sinks, which can further reduce greenhouse gas concentrations in the atmosphere.

Figure 8 Collection of Recyclables in Kentucky



*Note: *Aluminum, newspapers, cardboard, paper, glass, plastic. Source: Ky. Division of Waste Management, County Solid Waste Reports which include data on public and private sector collection, where available.*

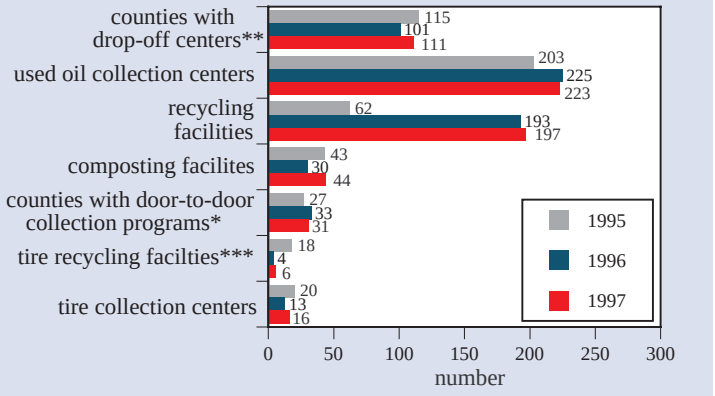
Source Recycling programs vary throughout the Commonwealth. Most Kentucky residents are now within reach of a recycling operation. In 1997, 111 counties had recycling drop-off centers, 36 had composting facilities, and 31 counties had door-to-door recycling collection programs.

Goal Reduce the weight of municipal solid waste disposed at municipal landfills by a minimum of 25% by July 1, 1997, using fiscal year 1993 as a base year per KRS 224.43-010.

Progress Kentuckians are doing their part to recycle wastes. The Commonwealth's recycling rate was 28% in fiscal year 1997, according to the Kentucky Division of Waste Management. This is an improvement over its 1990 recycling rate of 17%. During 1997, more than a million tons of recyclables were reported collected. However, it is not possible to determine how much of this waste was actually recycled, since recyclers are not required to report this information to the state.

The Kentucky Division of Waste Management formed the Buy Recycled Alliance in 1998 to promote the use of recycled products in the state. To date, 179 organizations have joined the Alliance and made commitments to buy recycled products.

Figure 9 Recycling Facilities and Programs in Kentucky



*Note: *Counties where one or more communities have door-to-door collection of recyclables. **Some counties have more than one drop-off facility. ***There are two tire recyclers in Kentucky; the number indicated in the chart also includes tire transporters. Source: Ky. Division of Waste Management*

Indicator 7: Solid Waste Enforcement

Background Kentucky has passed numerous laws and regulations to ensure the safe disposal of solid waste. But the state still faces numerous solid waste issues—from household garbage collection to ensuring proper operation of landfills and other waste management facilities. Enforcement of solid waste rules provides a good indicator of the state's commitment to carrying out solid waste rules and regulations and ultimately how effective Kentucky is in meeting its waste management goals.

Source The Kentucky Division of Waste Management currently permits and regulates 407 solid waste disposal facilities. In addition, the Division responds to complaints regarding waste activities.

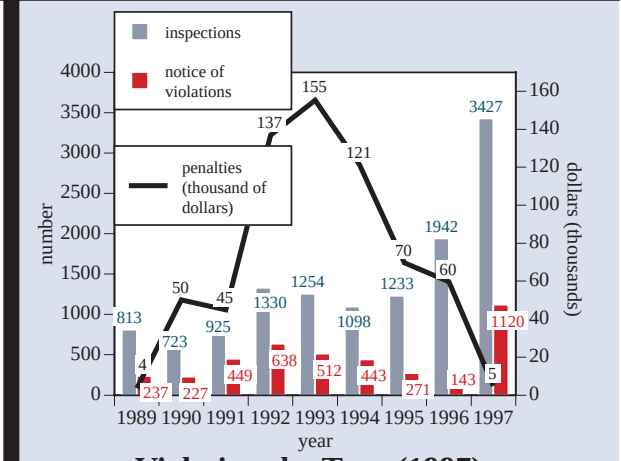
Goal Ensure compliance with state and federal solid waste laws and regulations.

Progress A review of the Kentucky Division of Waste Management's solid waste enforcement trends reveals a dramatic increase in inspections and violations cited since 1995. In 1995, there were 1,233 inspections, 271 violations cited, and $70,000 in penalties assessed. By 1997, the number of inspections more than doubled to 3,427 and the number of violations cited rose fourfold to 1,120. However, the total amount of solid waste penalties assessed declined from $70,000 in 1995 to $5,000 in 1997.

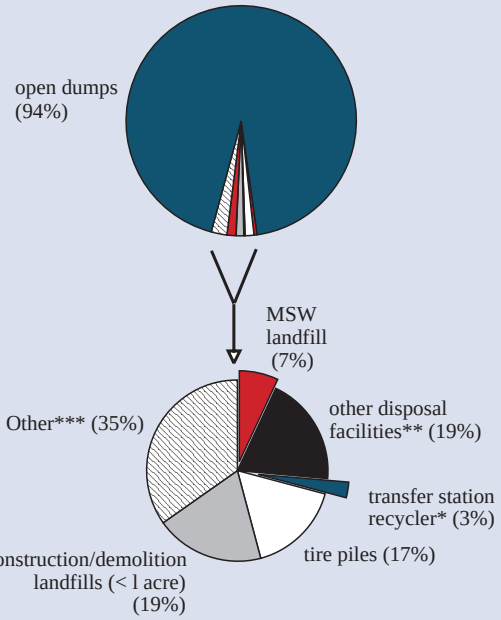
These changes are most likely in response to the Natural Resource and Environmental Protection Cabinet's 1996 Open Dump Campaign. During 1997, the single largest category of solid waste violations was open dumping, which constituted 94% of the violations cited. Penalties are often difficult to assess against open dumpers due to the difficulty of identifying violators. When a violator is identified, the Cabinet has focused on persuading the responsible party to clean up the dump in lieu of a penalty. From June 1997 to October 1998, responsible parties cleaned up 450 open dumps as part of the Cabinet's Open Dump Campaign.

Figure 10

Solid Waste Enforcement/Compliance Trends in Kentucky



Violations by Type (1997)

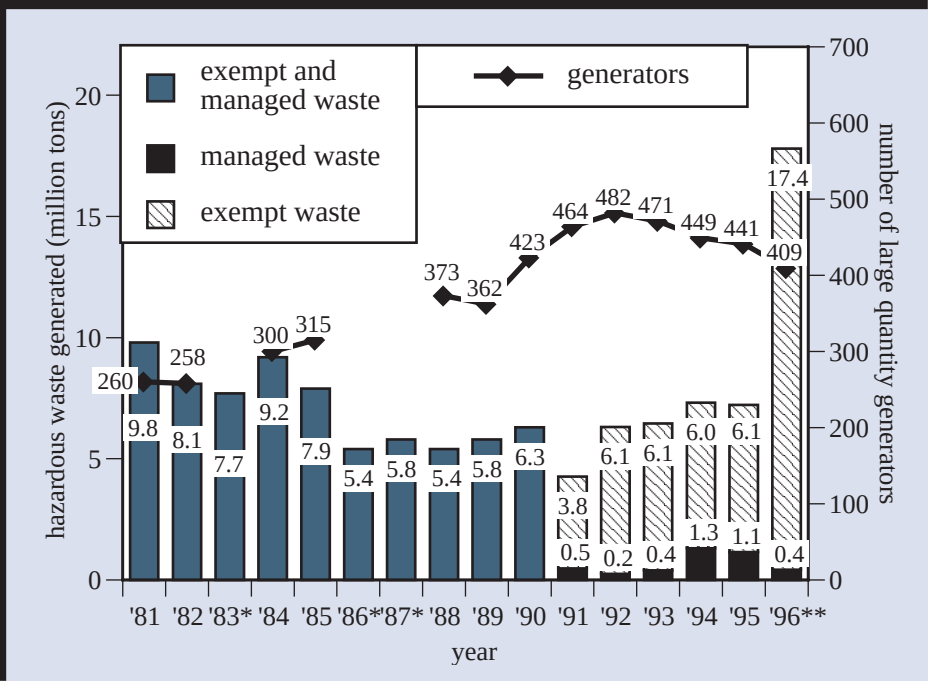


**Includes recyclers and local drop-off points/stations for solid waste. **Permitted CDDs, residual, and special waste landfills, landfarms, compost facilities. ***Junkyards, sawdust piles, oil and brine pits, septic tanks, convenience centers, road oilings, sludge giveaway. Chart uses revised data from the NREPC computer system which may differ from previous EQC reports. Source: Ky. Division of Waste Management*

Indicator 8: Hazardous Waste Generation

Figure 11

Hazardous Waste Generation in Kentucky



*Note: Based on large quantity generators. Does not include remediation waste. Exempt waste is primarily corrosive wastewater treated on-site and is exempt from most hazardous waste permitting requirements. Managed waste is generally more complex chemicals requiring more sophisticated treatment subject to hazardous waste permitting. Totals rounded. *Generator data not available. **Improved reporting accounts for nearly threefold increase in exempt waste during 1996. Source: Ky. Div. of Waste Management*

BACKGROUND Hazardous waste has the potential to cause serious health and environmental threats if not managed properly. Hazardous waste is regulated under the federal Resource Conservation and Recovery Act of 1976 (RCRA). The U.S. EPA has established criteria and testing methods for hazardous waste that exhibits characteristics of ignitability, corrosivity, reactivity, or toxicity. Wastes resulting from certain industrial processes, unless exempted, are designated as hazardous and are referred to as "listed" wastes. Both federal and state hazardous waste laws primarily focus on the management of RCRA hazardous waste produced by large quantity generators. A large quantity generator is defined as producing 2,200 pounds of hazardous waste in a given month, or 2.2 pounds or more of acutely hazardous waste a month, or 220 pounds of spill cleanup material in a given month.

SOURCE In 1996, the most recent year data is available, 409 large quantity generators in Kentucky produced 17.8 million tons of hazardous waste. Ninety-eight percent of the waste was classified as exempt hazardous waste, which is primarily corrosive wastewater that is treated in units exempt from hazardous waste permitting requirements. This treated waste is discharged through state water permits to surface waters or to publicly owned wastewater

Figure 12

Top 10 Generators of Exempt Hazardous Waste (1996)

Company (City)	Tons
Ashland Petroleum (Catlettsburg)	8,846,000
DuPont (Louisville)	2,406,250
B.F. Goodrich (Calvert City)	2,316,333
Westlake Monomers (Calvert City)	789,919
Elf Atochem (Calvert City)	721,600
Engelhard Corp. (Louisville)	389,473
Dow Corning (Carrollton)	306,260
B.F. Goodrich (Louisville)	300,153
DuPont Dow Elastomers (Louisville)	175,000
Gamco Products (Henderson)	164,848
Total Top Ten	**16,415,836**
Total State	**17,377,487**

Exempt waste is primarily corrosive wastewater treated on-site and is exempt from most hazardous waste permitting requirements. Source: RCRIS Database

treatment plants. The remaining 2% of the waste generated was classified as managed waste. These wastes primarily include ignitable wastes such as gasoline, mineral spirits and paint thinners; solvents such as dry cleaner solvents and engine degreasers; and other chemical and toxic wastes. Managed wastes are generally more complex chemicals that require specialized treatment technologies subject to hazardous waste permitting requirements.

The top ten generators of RCRA-exempt hazardous waste were responsible for 94% of the 17.37 million tons of waste generated in the state during 1996. The top ten generators of RCRA managed waste account for 78% of the 423,529 tons of waste generated in the state during 1996. There are many other businesses that create hazardous waste in small amounts, but generation data is not collected from small quantity generators or other small users or handlers of hazardous waste.

Figure 13

Top 10 Generators of Managed Hazardous Waste In Ky. (1996)

Company (City)	1990 Tons	1995 Tons	1996 Tons
Ken Dec (Horse Cave)	712	192,724	192,470
Safety-Kleen* (Smithfield)	43,744	83,576	55,351
Gallatin Steel (Warsaw)	**	7,632	21,648
LWD* (Calvert City)	8,003	11,599	12,036
ECSI (Brooks)	19,449	9,331	11,200
Rohm and Haas (Louisville)	20,006	13,196	10,552
Ashland Petroleum (Catlettsburg)	703	408	8,829
Koppers (Guthrie)	20	85	6,881
ISP Chemicals (Calvert City)	9,350	6,585	6,345
Superior Graphite (Hopkinsville)	135	1,826	4,621
Total Top Ten	**102,132**	**326,962**	**329,934**
Total State	**Not Available**	**1,149,881**	**423,529**

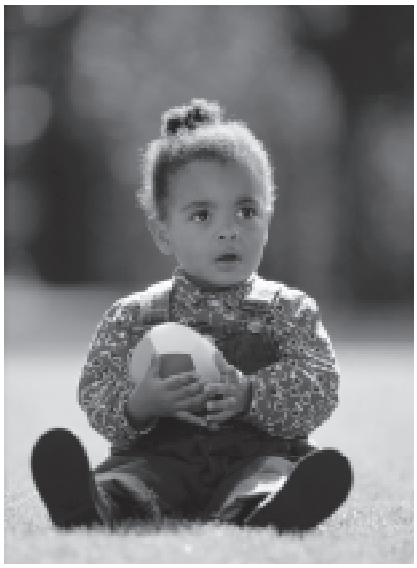
*Note: Managed waste is generally more resistent chemicals requiring more sophisticated treatment subject to hazardous waste permitting. *Treatment, storage, disposal facility. **Not operating. Source: RCRIS Database and RTK.net BRS database*

Goal Reduce the amount of hazardous waste produced by each generator regulated under Title III, Section 313 of the Superfund Amendments and Reauthorization Act of 1986 and KRS 224.46-305 by 25% by 1997 and 50% by the year 2002, using 1987 as the base year.

Progress Because of hazardous waste reclassifications and other regulatory changes made from year to year, it is difficult to measure whether Kentucky has met its 25% reduction goal. Complicating this further is the fact that some large quantity generators appear to have failed to properly report hazardous waste generation. For at least two of the state's largest generators, Ashland Inc. and DuPont, this oversight was corrected in 1996. These two companies alone nearly tripled the amount of exempt waste reported in the state during 1996.

A review of the top ten generators/handlers of managed hazardous wastes during 1996 reveals that few companies have reduced the amount of waste produced. A notable exception is Rohm and Haas in Louisville. The chemical company cut managed hazardous waste production by nearly 50% between 1990 and 1996.

The U.S. EPA and the Kentucky Department for Environmental Protection are now focusing on reducing hazardous wastes containing toxic chemicals that are more persistent and bio-accumulative. Mercury is ranked top among these wastes. The leading generator of mercury-containing waste in the state is B.F. Goodrich. Between 1989 and 1997, B.F. Goodrich plants in Kentucky (Calvert City and Louisville) reduced mercury-containing wastes by 38%, from 47.5 tons to 29.6 tons. However, statewide there was an overall increase of 2.5% (477,947 tons in 1989 to 489,983 tons in 1997) in the production of mercury-bearing waste.



Indicator 9: Hazardous Waste Treatment and Disposal

Figure 14

Hazardous Waste Treatment and Disposal Methods in Kentucky

Treatment	1993 (tons)	1995 (tons)	1996 (tons)
aqueous organic	2,181,628	1,808,026	9,255,931
other treatment	2,079,075	2,281,184	5,797,407*
aqueous inorganic	2,001,389	1,208,224	1,447,973
aqueous inorganic/org.	150	274,313	296,433
energy recovery	58,910	89,248	71,193
disposal**	21,731	26,679	22,696
incineration	21,847	43,738	20,724
other recovery	41	42,828	6,686
solvent recovery	8,369	7,040	4,218
fuel blending	42,977	5,629	3,857
stabilization	3,445	3,843	3,776
metals recovery	3,094	2,326	1,954

*Note: Large quantity generator waste. Does not include waste imported into Ky. for disposal or treatment because data is not available. Earlier data not available. *Increase attributed to start up of Calgon Carbon which uses carbon to treat and destroy organic solvents and gases. **Landfills, waste piles, impoundments, landfarms. Source: RCRIS Database*

Background Hazardous waste generally must be treated before it can be disposed of. Different types of hazardous waste require different types of treatment and disposal. Facilities that treat, store, or dispose of hazardous waste must meet rigorous federal and state operating and closure requirements.

Source In 1996, 12 commercial hazardous waste treatment, storage, and disposal facilities (TSDF) and 24 private TSDFs (facilities that treated its waste on-site) were permitted to operate in the state.

Goal Ensure the adequate treatment and disposal of hazardous waste consistent with state and federal rules and consistent with a national philosophy which emphasizes prevention over disposal. Specifically the U.S. EPA has promoted a hierarchy of waste management with the preferred option to reduce waste generation followed by recycling, treatment, and disposal.

Progress During 1996, 96% of the hazardous waste produced in Kentucky was chemically treated at the site of generation to render it nonhazardous. Most of these wastes were corrosive wastewater which was treated and discharged to waterways or to a publicly owned wastewater treatment plant under conditions specified in state KPDES water discharge permits and pretreatment programs.

Some hazardous waste requires more sophisticated treatment and disposal due to its hazardous constituents. These wastes include solvent and sludge wastes, inorganic and organic chemical wastes, toxic hazardous wastes, and many other hazardous chemical wastes. These wastes are stored, treated, or disposed at a TSDF permitted in the state or sent out of state for treatment or disposal. There are different types of TSDFs including hazardous waste incinerators, fuel blenders, and waste recovery facilities. The amount of waste received by commercial TSDFs varies from year to year based on waste generated as well as the amount of waste materials removed from spill sites and contaminated waste sites.

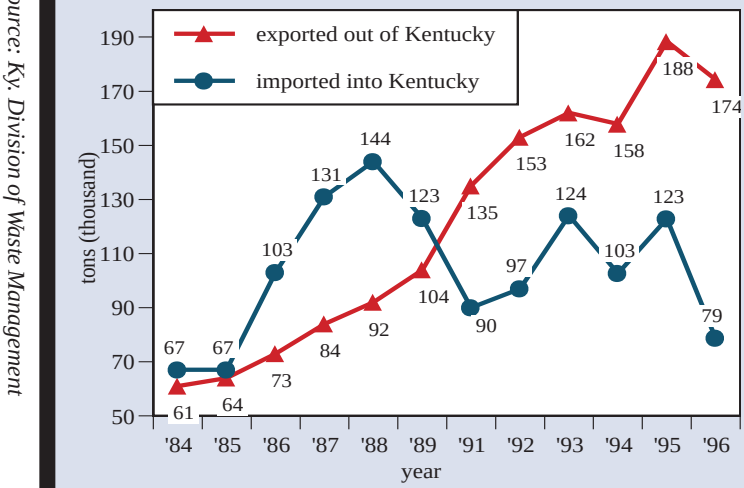
While the waste management hierarchy ranks recycling as its second best option, only a small portion of Kentucky-generated hazardous waste, 84,051 tons, was recovered for metals, solvents, or other materials. Most of Kentucky-generated waste was chemically treated in 1996. Another 22,696 tons were disposed of in a landfill, impoundment, a waste pile, or landfarm. Ashland Inc. in Boyd County operated the only hazardous waste landfill during 1996. The landfill was permitted to receive company-generated hazardous and solid waste. The Ashland Inc. landfill no longer receives hazardous waste. A portion of hazardous waste generated in Kentucky during 1997 was also treated at one the three hazardous waste incinerators operating in Kentucky: Elf Atochem at Calvert City and Carrollton, and LWD in Calvert City. LWD operates the state's only commercial hazardous waste incinerator. LWD is currently operating under an interim permit.

Indicator 10: Hazardous Imports and Exports

Background Kentucky, like most states, relies on facilities both inside and outside its borders for the treatment and disposal of hazardous wastes. The amount of waste imported and exported into Kentucky can vary significantly from year to year.

Figure 15

Hazardous Waste Imports and Exports in Kentucky



Source: Ky. Division of Waste Management

Source During 1996, hazardous waste generated in Kentucky was shipped to 32 states for treatment and disposal. That year, hazardous waste was also imported into Kentucky from 44 states, including Puerto Rico, and from at least one foreign country for treatment and disposal.

Goal Ensure the adequate treatment and disposal of hazardous waste consistent with state and federal rules.

Progress Kentucky remains a net exporter of hazardous waste. The state exported 174,300 tons of hazardous waste out of state for treatment and disposal in 1996. This represents less than 1% of the 17.8 million tons of hazardous waste generated in the Commonwealth.

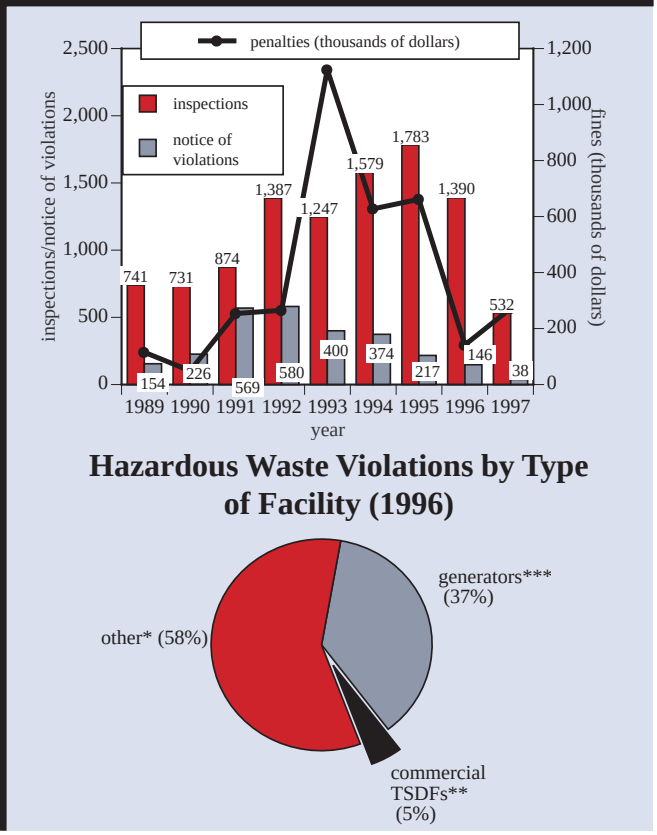
Between 1995 and 1996, the amount of waste imported into Kentucky for treatment or disposal decreased by 36%—from 123,000 tons to 79,000 tons. The Kentucky Division of Waste Management indicates that this decrease was likely due to a decline in the amount of remediation waste from contaminated sites imported into Kentucky. During 1996, treatment, storage, and disposal hazardous waste facilities processed 78,743 tons of RCRA hazardous waste imported into the Commonwealth.

Safety-Kleen (39,008 tons), LWD Inc. (40,556 tons), and LWD Sanitary Landfill (12,102 tons) treated or disposed of 75% of the waste imported into Kentucky, according to state records. LWD (the only commercial incinerator in Kentucky) incinerated 23,510 tons of hazardous waste in 1996—a 39% decrease from 1995.

Indicator 11: Hazardous Waste Enforcement

Figure 16

Hazardous Waste Enforcement and Compliance Trends in Kentucky



Hazardous Waste Violations by Type of Facility (1996)

*Note: *Used oil marketers, transporters, non-notifiers, limited quantity generators, illegal disposal. **Permitted treatment, storage, disposal facilities that receive waste from off-site. ***Large and small quantity generators. Chart uses revised data from NREPC computer system which may vary from previous EQC reports.*
Source: Ky. Division of Waste Management

Background Kentucky began regulating hazardous waste in 1979. State hazardous waste permitting and enforcement programs were later put in place in 1982. State hazardous waste regulatory programs have evolved since then, and now include monitoring, record keeping, emergency planning, closure procedures, and identification and cleanup of waste sites. While these efforts have significantly reduced environmental and public health risks, contaminated waste sites, spills, as well as improper management and illegal disposal, continue to pose problems throughout the Commonwealth.

Source In 1997, there were a number of sources subject to hazardous waste laws and regulations in Kentucky including 397 large quantity hazardous waste generators; 36 treatment, storage, and disposal facilities; 274 transporters; and 1,819 conditionally exempt small quantity generators.

Goal Ensure that hazardous waste generators and handlers are brought into compliance with state laws and regulations within the shortest possible time after the detection of any violation.

Progress The Kentucky Division of Waste Management is the principal regulatory agency in the state responsible for ensuring that hazardous wastes are properly managed and disposed. In 1995, the number of inspections conducted by the Division reached a record high of 1,783, but by 1997, the number of inspections had fallen 70% to 532. The decline is attributed to a shift in priorities by the Natural Resources and Environmental Protection Cabinet to a greater enforcement emphasis on underground storage tanks and open dumps.

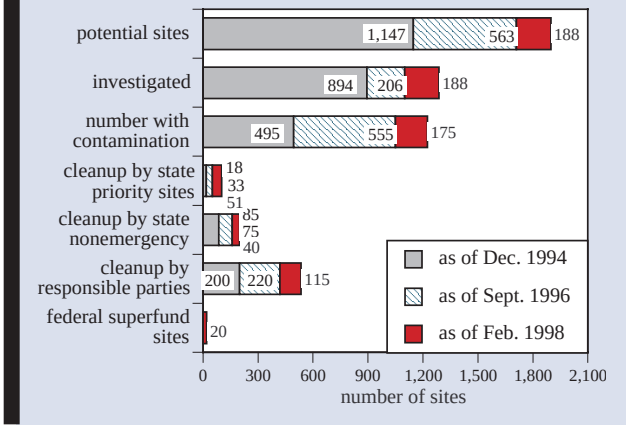
Hazardous waste violations cited also declined in 1997 to their lowest level since EQC began tracking violations in 1989. In 1997, 38 violations were issued by the Kentucky Division of Waste Management and $271,600 in penalties was assessed. More than half, 58%, of the violations occurred at used oil marketers, transporters, limited quantity generators, and for the illegal treatment, storage or disposal of hazardous waste.

Indicator 12: Contaminated Waste Sites

Background In Kentucky, hundreds of old or abandoned waste sites pose significant threats to the environment and public health. Sites that are highly contaminated, or pose an immediate public health threat, may be proposed for inclusion on the U.S. EPA "National Priority List" (NPL), better known as Superfund. Contaminated sites that do not qualify for Superfund status become the state's responsibility to oversee site assessment, cleanup, and future monitoring.

Source Past hazardous waste management practices have led to numerous contaminated waste sites across the state. Some common sites include abandoned warehouses, manufacturing facilities, processing plants, and landfills.

Figure 17 Contaminated Waste Sites in Kentucky



Source: Ky. Division of Waste Management

Goal Eliminate the health and environmental threats posed by contaminated waste sites.

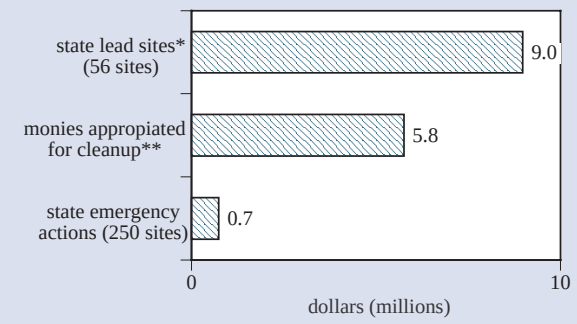
Progress Nearly 1,900 potential contaminated waste sites have been identified in Kentucky. And every year more are discovered. Of the 1,288 hazardous waste sites investigated, 1,255 had confirmed contamination and 66% had been remediated by the state or responsible parties.

A primary source of funds to clean up contaminated waste sites where responsible parties cannot be found or are financially unable to cleanup a site is the Kentucky Hazardous Waste Management Fund. The fund, established in 1981 and later amended in 1990, is financed through a fee on hazardous waste produced. Each year, about $2.1 million is collected from hazardous waste generators to finance site cleanups. Since 1992, the fund has been used to investigate and remediate 56 contaminated waste sites and conduct 250 emergency removal operations at a cost of $9.7 million. The Hazardous Waste Management fund is scheduled to sunset June 30, 2000.

Because of the sheer number of sites needing remediation, the Kentucky Division of Waste Management has prioritized the clean up of 21 sites based on environmental and public health threats. Three of these sites are under review, ten are being investigated, seven have a cleanup design under development, and one site has been contained.

Kentucky and the nation have also seen some progress in the remediation of federal Superfund sites. Currently, 89% of the 1,405 federal Superfund sites have cleanups underway. In Kentucky, seven of the 20 Superfund sites have had remediation completed, and these sites are now in the operation and maintenance (O&M) phase.

Figure 18 Expenditures from Kentucky Hazardous Waste Management Fund



As of January 1999, the Hazardous Waste Management Fund contained a balance of $848,309.

*Note: As of Dec. 1998. *Funds appropriated for cleanups. **Remediation complete or ongoing. Source: Ky. Division of Waste Management*

Figure 19 State Priority Waste Sites

Site	County	Status
Tindall Property	Anderson	RI
Johnson Fork Dump	Boyd	RD
Donaldson Art Sign	Boyd	RD
Douglas Lane	Boyle	RI
Mudd Property	Bullitt	RI
Ecology Systems	Calloway	RI
Hunts Hardwoods	Crittenden	RA
Eva Smith Property	Daviess	RD
Aldergate Tire Fire	Estill	RI
Tobacco State	Fayette	RI
Great South. Refinery	Fayette	RI
Jeff Meade Landfill	Greenup	RD
Ky. Industrial Haulers	Hardin	RD
Kwik Klean Cleaners	Hopkins	RD
Exmet	Jefferson	B
Ponderosa Speedway	Lincoln	RI
Allen Chemical	Marion	RA
BC Battery	Nelson	RA
Derby Tank & Car	Meade	RI
Primary Recovery	Muhlenberg	RI
Rad Chemical	Warren	RD

RD-Remedial design (cleanup plan under development). RA-Remedial assessment (site under study). RI-Remedial investigation (site under investigation). B-Contained in place and managed.
Source: Ky. Division of Waste Management

Figure 20 Federal Superfund Sites In Kentucky

Site	Listed	Status
A.L. Taylor-Valley of Drums Brooks–Bullitt Co.	1981	cleanup complete-O&M
B.F. Goodrich/Airco (2 sites) Calvert City–Marshall Co.	1982	cleanup complete-O&M
Distler Brickyard West Point–Hardin Co.	1982	cleanup complete-O&M
Distler Farm Louisville–Jefferson Co.	1982	cleanup complete-O&M
Lee's Lane Landfill Louisville–Jefferson Co.	1982	cleanup complete-O&M
Newport Dump Wilder–Campbell Co.	1982	cleanup complete-O&M
Smith's Farm Brooks–Bullitt Co.	1984	cleanup underway
Maxey Flats Hillsboro–Fleming Co.	1986	cleanup underway
Howe Valley Howe Valley–Hardin Co.	1987	cleanup complete-O&M
Red–Penn Sanitation Co. Peewee Valley–Oldham Co.	1989	no action
Tri–City Indstrl. Disp. Site Brooks–Bullitt Co.	1989	cleanup underway
Brantley Landfill Island–McLean Co.	1990	cleanup underway
Caldwell Lace & Leather Auburn–Logan Co.	1990	no action
Fort Hartford Coal Olaton–Ohio Co.	1990	cleanup underway
General Tire & Rubber Mayfield–Graves Co.	1990	no action
Green River Disposal Site Maceo–Daviess Co.	1990	cleanup underway
Paducah Gaseous Diff. Plant Paducah-McCracken Co.	1992	site study
National Southwire Alum. Hawesville-Hancock Co.	1992	site study
National Elec. Coil Dayhoit-Harlan Co.	1992	cleanup underway

O&M - Remediation complete and in operation and maintenance. Source: Ky. Division of Waste Management

Indicator 13: Underground Storage Tanks

Background Underground petroleum and hazardous chemical storage tanks began to be regulated in Kentucky in 1986. These tanks can leak and pose pollution threats to drinking water supplies and to the environment.

Source There are 44,937 underground storage tanks (USTs) registered in Kentucky. An estimated 14,323 are in active use and 30,614 have been closed. There are also hundreds of thousands of tanks in Kentucky that have not been registered. Many at abandoned gas stations.

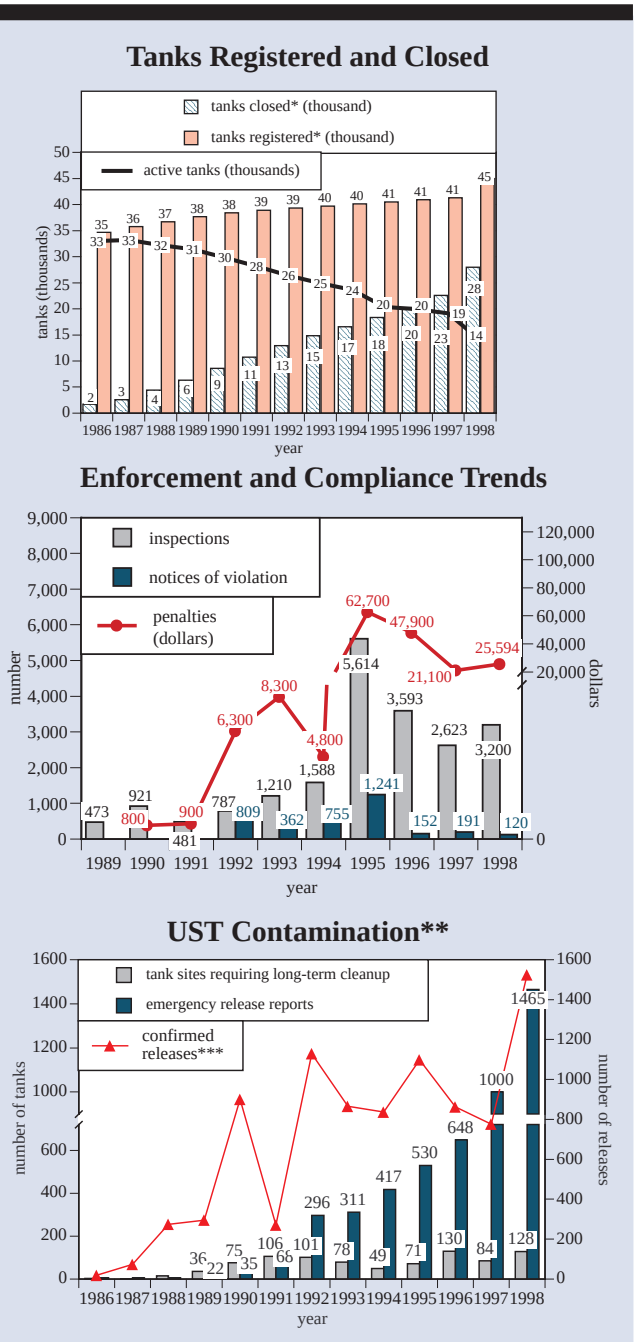
Goal Ensure compliance for all active underground storage tanks for leak detection, spill prevention, overfill prevention, and corrosion protection requirements.

Progress As of February 1999, 95.1% of the 14,323 active registered USTs met 1993 release detection rules, 81.4% met the 1998 overfill requirements and corrosion protection requirements, and 82.6% met spill prevention requirements.

UST systems that did not meet the 1998 deadline, but intend to comply, had the option of notifying the state and being placed in temporary closure. This will give tank owners until December 22, 1999, to upgrade or close their facilities. As of March 25, 1999, 7% of the active tanks in Kentucky (913) did not meet the 1998 tank standards. This is a significant improvement since November 1998, when 45% of the active tanks did not meet the 1998 tank rules.

Many UST site cleanups have been financed by the state Petroleum Storage Tank Assurance Fund, established in 1990. The purpose of the fund is to provide insurance to tank owners and help pay for tank cleanups. The law provides for a fee of 1.4 cents per gallon of motor fuel sold in the state to finance the fund. As of October 1998, $179 million has been obligated from the fund to 1,952 applicants, and approximately $45 million remains unobligated. To date, 613 of the funded projects have been remediated at an average cost of $49,600 per site. There are 1,250 UST project fund cleanups currently underway.

Figure 21 Underground Storage Tanks Status in Ky.



*Note: *Cumulative yearly total. **Soil and/or groundwater contamination. Chart uses revised data from the computer system which may differ from previous EQC reports. ***Confirmed releases are defined as either laboratory or field evidence of contamination. Source: Ky. Division of Waste Management.*